Fact Sheet

WHITE PHOSPHORUS CONTAMINATION OF EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA

PROBLEM

Eagle River Flats is a 2165-acre estuarine salt marsh that was used as the primary ordnance impact area for Fort Richardson since the mid-1940s. It is an important staging ground for waterfowl, including ducks, geese, and swans, during their spring and fall migrations. In 1982, an unusually high number of waterfowl carcasses were found. Searches conducted between 1982 and 1989 indicated that large numbers of waterfowl, up to several thousand a year, were dying of unknown causes.

SOLUTION

Field and laboratory studies conducted during 1990 by researchers from CRREL identified white phosphorus (WP) residues from smoke munitions as the cause of the waterfowl deaths. The saturated salt marsh sediments of Eagle River Flats were contaminated by the incomplete burning of white phosphorus following detonation of smoke-producing munitions. Waterfowl feeding in the contaminated sediment then became poisoned by ingesting particles of white phosphorus. Eagle River Flats is the first Army training area identified with white phosphorus contamination. Prior to our findings at Eagle River Flats, white phosphorus was thought to be nonpersistent in the environment.

The discovery of white phosphorus residues from smoke munitions at Eagle River Flats shows that the current understanding of the environmental fate of white phosphorus is poor. Lack of understanding of the environmental fate and transport of white phosphorus residues precludes accurate ecological assessments and planning for efficient cleanup. CRREL has used a multidisciplinary research team to address these knowledge gaps and to assess the nature and extent of WP contamination.

CRREL continues to work for U.S. Army Alaska to assess methods of cleaning up the white phosphorus contamination under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA). Eagle River Flats and Fort Richardson were placed on the EPA's National Priorities List during the summer of 1994.

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